AMENDMENTS TO CLAIMS

Claims 1, 2, 12, 13 and 15 are being canceled, and claims 3,4, 6, 8-10, 14, 16-18, 21 and 25 are being amended. All pending claims are reproduced below, including those that remain unchanged.

1. (Canceled)

2. (Canceled)

3. (Currently Amended) ~~The method of claim 2,~~ <u>A method for efficiently characterizing an N-port device under test (DUT) using a vector network analyzer (VNA), wherein N is 2 or greater, the method including:</u>

<u>(a) dividing the N-port DUT into multiple sub-devices, that each include less than N ports, based on transmission path levels between the N-ports;</u>

<u>(b) performing at least an M-port VNA calibration, where M is equal to a number of ports on the one of the multiple sub-devices having the greatest number of ports; and</u>

<u>(c) using the VNA to determine S-parameters for each sub-device;</u>

wherein step (a) includes~~:~~

(a.1) determining a transmission path level between each pair of the N ports; and

(a.2) grouping ports together as being part of a same sub-device or a different sub-device based on relative transmission levels between the pairs of ports.

4. (Currently Amended) The method of claim 3, wherein step (a.2) includes for each port:

comparing a highest transmission path level associated with the port to each other possible transmission path level associated with the port;

grouping those of the other ports corresponding to a transmission level path within a threshold range of the highest transmission path, as being part of a same sub-device; and

grouping those of the other ports corresponding to a transmission level path not ~~with~~ <u>within</u> the threshold range of the highest transmission path, as being part of a separate sub-device.

5. (Original) The method of claim 4, wherein the threshold range is a predetermined number of dB.

6. (Currently Amended) The method of claim ~~1~~ <u>3</u>, wherein step (b) includes performing an M port calibration.

7. (Original) The method of claim 6, wherein more than one of the sub-devices can include M ports.

8. (Currently Amended) The method of claim ~~1~~ <u>3</u>, wherein step (b) includes performing an N port calibration.

9. (Currently Amended) The method of claim ~~1~~ 3, wherein step (c) includes for each sub-device:

(c.1) measuring S-parameters for the sub-device; and

(c.2) removing calibration errors from the measured S-parameters, the calibration errors determined by the VNA during step (b).

10. (Currently Amended) ~~The method of claim 9, wherein:~~ A method for efficiently characterizing an N-port device under test (DUT) using a vector network analyzer (VNA), wherein N is 2 or greater, the method including:

(a) dividing the N-port DUT into multiple sub-devices that each include less than N ports;

(b) performing at least an M-port VNA calibration, where M is equal to a number of ports on the one of the multiple sub-devices having the greatest number of ports; and

(c) using the VNA to determine S-parameters for each sub-device;

wherein step (b) includes determining a set of error coefficients representative of calibration errors; and

wherein step (c) includes for each sub-device

(c.1) measuring S-parameters for the sub-device; and

(c.2) removing calibration errors from the measured S-parameters ~~step (c.2) includes~~ using only a sub-set of the set of error coefficients determined in step (b)

~~when removing calibration errors~~, the sub-set corresponding to the measured S-parameters.

11. (Original) The method of claim 8, wherein step (a) can be performed by a user with or without the assistance of the VNA, or by the VNA with or without the assistance of a user.

12. (Canceled)

13. (Canceled)

14. (Currently Amended) ~~The method of claim 13,~~ A method to be performed with a vector network analyzer (VNA), the method for efficiently characterizing an N-port device under test (DUT), wherein N is 2 or greater, and wherein the N-port DUT is capable of being treated as multiple sub-devices that each include less than N ports, the method including:

(a) performing at least an M-port VNA calibration, where M is equal to a number of ports on the one of the multiple sub-devices having the greatest number of ports;

(b) presenting at least one menu that allows selection of which S-parameters are of interest for each sub-device;

(c) accepting inputs from a user or a test controller that specify which S-parameters are of interest for each sub-device; and

(d) determining the S-parameters of interest for each sub-device as identified at step (c), without determining the S-parameters that are not of interest;

wherein step (b) comprises presenting a menu that includes links to the following sub-menus~~:~~

a sub-menu that allows selection of which ports of the VNA should be used to perform full S-parameter measurements;

a sub-menu that allows selection of which ports of the VNA should be used to perform reflection only S-parameter measurements; and

a sub-menu that allows selection of any possible combination of the S-parameters corresponding to a sub-device.

15. (Canceled)

16. (Currently Amended) The method of claim ~~12~~ 14, wherein step (d) includes for each sub-device:

(d.1) measuring the S-parameters of interest for each sub-device; and

(d.2) removing calibration errors from the measured S-parameters, the calibration errors determined by the VNA during step ~~(b)~~ (a).

17. (Currently Amended) ~~The method of claim 16, wherein:~~ A method to be performed with a vector network analyzer (VNA), the method for efficiently characterizing an N-port device under test (DUT), wherein N is 2 or greater, and wherein

the N-port DUT is capable of being treated as multiple sub-devices that each include less than N ports, the method including:

(a) performing at least an M-port VNA calibration, where M is equal to a number of ports on the one of the multiple sub-devices having the greatest number of ports;

(b) presenting at least one menu that allows selection of which S-parameters are of interest for each sub-device;

(c) accepting inputs from a user or a test controller that specify which S-parameters are of interest for each sub-device; and

(d) determining the S-parameters of interest for each sub-device as identified at step (c), without determining the S-parameters that are not of interest;

wherein step (a) includes determining a set of error coefficients representative of calibration errors; and

wherein step (d) includes

(d.1) measuring the S-parameters of interest for each sub-device; and

(d.2) removing calibration errors from the measured S-parameters ~~step (d.2) includes~~ using only a sub-set of the set of error coefficients determined in step (a) ~~when removing calibration errors~~, the sub-set corresponding to the measured S-parameters of interest as accepted in step (c).

18. (Currently Amended) The method of claim 17, wherein step (d.2) further includes determining the error coefficient sub-set using the following rules:

(i) for each reflection parameter ~~accepted~~ <u>specified</u> at step (c), including corresponding reflectometer error coefficients in the error coefficient sub-set;

(ii) for each transmission parameter ~~accepted~~ <u>specified</u> at step (c), including its corresponding transmission tracking error coefficient in the error coefficient sub-set; and

(iii) for each transmission parameter ~~accepted~~ <u>specified</u> at step (c) that also has its matching reflection parameters ~~activated~~ <u>specified</u> at step (c), including its corresponding load match error coefficients in the error coefficient sub-set.

19. (Original) The method of claim 18, wherein the reflectometer error coefficients include directivity, source match and reflection tracking error coefficients.

20. (Original) The method of claim 17, wherein prior to step (d.2) the corresponding sub-set of error coefficients for each sub-device is made available in working memory so that error coefficients do not need to be recalled from storage memory each time step (d.2) is performed for a different one of the multiple sub-devices.

21. (Currently Amended) A method for efficiently characterizing multiple devices using an N-port vector network analyzer (VNA), wherein N is 2 or greater, and each device includes less than N ports, the method comprising:

(a) performing a parent calibration and storing a corresponding set of error coefficients in working memory;

(b) presenting at least one menu that allows a user or test controller to select which S-parameters are of interest for each device;

(c) accepting inputs that specify which S-parameters are of interest for each device; and

(d) determining the S-parameters of interest for each device as identified at step (c), without determining the S-parameters that are not of interest, as follows:

(d.1) measuring the S-parameters of interest for each device; and

(d.2) using only a sub-set of the set of error coefficients stored in working memory in step (a) to remove calibration errors from the measured S-parameters, without recalling error coefficients from static storage memory, the sub-set corresponding to the measured S-parameters of interest as ~~accepted~~ <u>specified</u> in step (c).

22. (Original) The method of claim 21, wherein each device is a sub-device of a larger device capable of being treated as multiple sub-devices because of no or very low transmission between certain ports of the larger device.

23. (Original) The method of claim 21, wherein each device is a physically separate device.

24. (Original) The method of claim 21, wherein each device is either a sub-device of a larger device capable of being treated as multiple sub-devices because of no or very low transmission between certain ports of the larger device, or a physically separate device.

25. (Currently Amended) The method of claim 21, wherein step (d.2) further includes determining the error coefficient sub-set using the following rules:

(i) for each reflection parameter ~~accepted~~ specified at step (c), including corresponding reflectometer error coefficients in the error coefficient sub-set;

(ii) for each transmission parameter ~~accepted~~ specified at step (c), including its corresponding transmission tracking error coefficient in the error coefficient sub-set; and

(iii) for each transmission parameter ~~accepted~~ specified at step (c) that also has its matching reflection parameters ~~activated~~ specified at step (c), including its corresponding load match error coefficients in the error coefficient sub-set.